CV SALTS

Central Valley Salinity Alternatives for Long-term Sustainability

Proposed Basin Plan Amendment to modify a provision of the Selenium Control Program in the San Joaquin River Basin

(Grassland Bypass Project Time Extension)

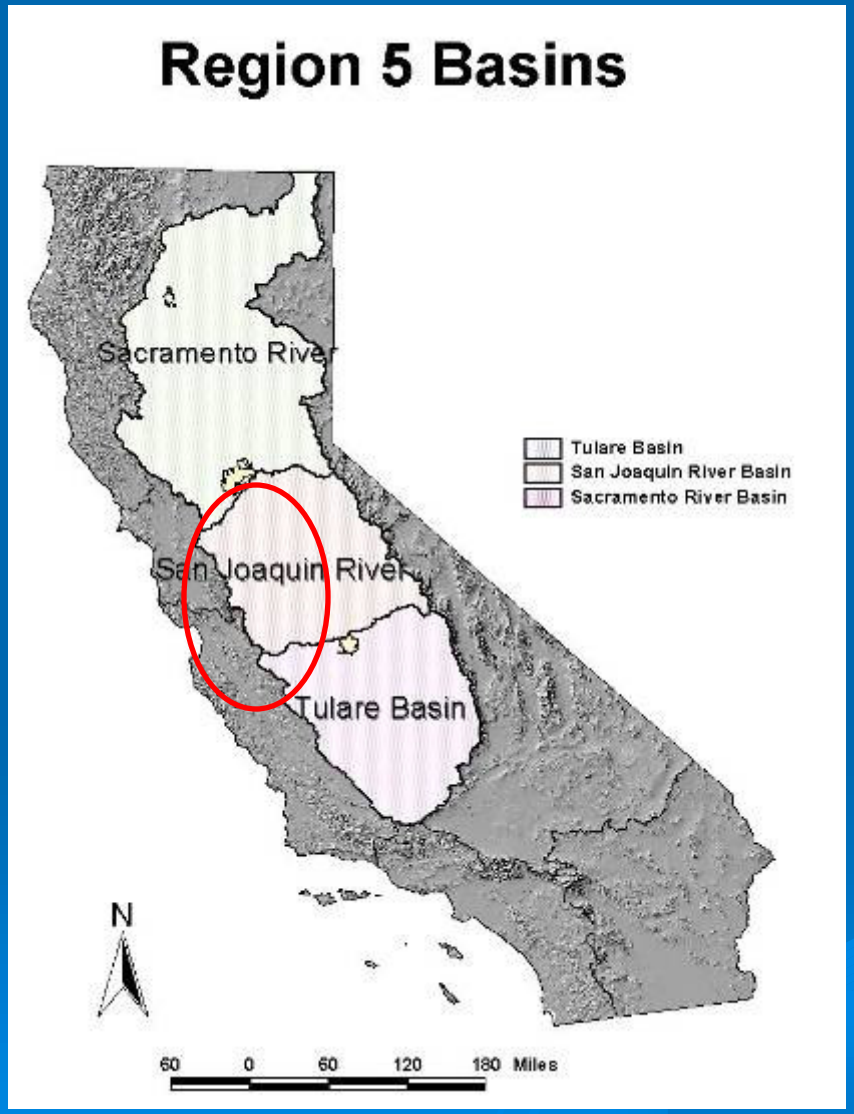
Overview

- Preview questions
- Background of the program
- Stakeholder proposal
- Westside drainage overview
- Discussion & vote

Questions before the committee

- Does the committee favor/oppose the drainage management approach that forms the basis of the selenium control program?
- Does the committee favor/oppose the proposed amendment?
- Should the basin plan amendment be prepared by Board staff or the CV-SALTS effort?
- Does the committee favor/oppose the salt (drainage) management strategy outlined in the Westside Regional Drainage Plan?

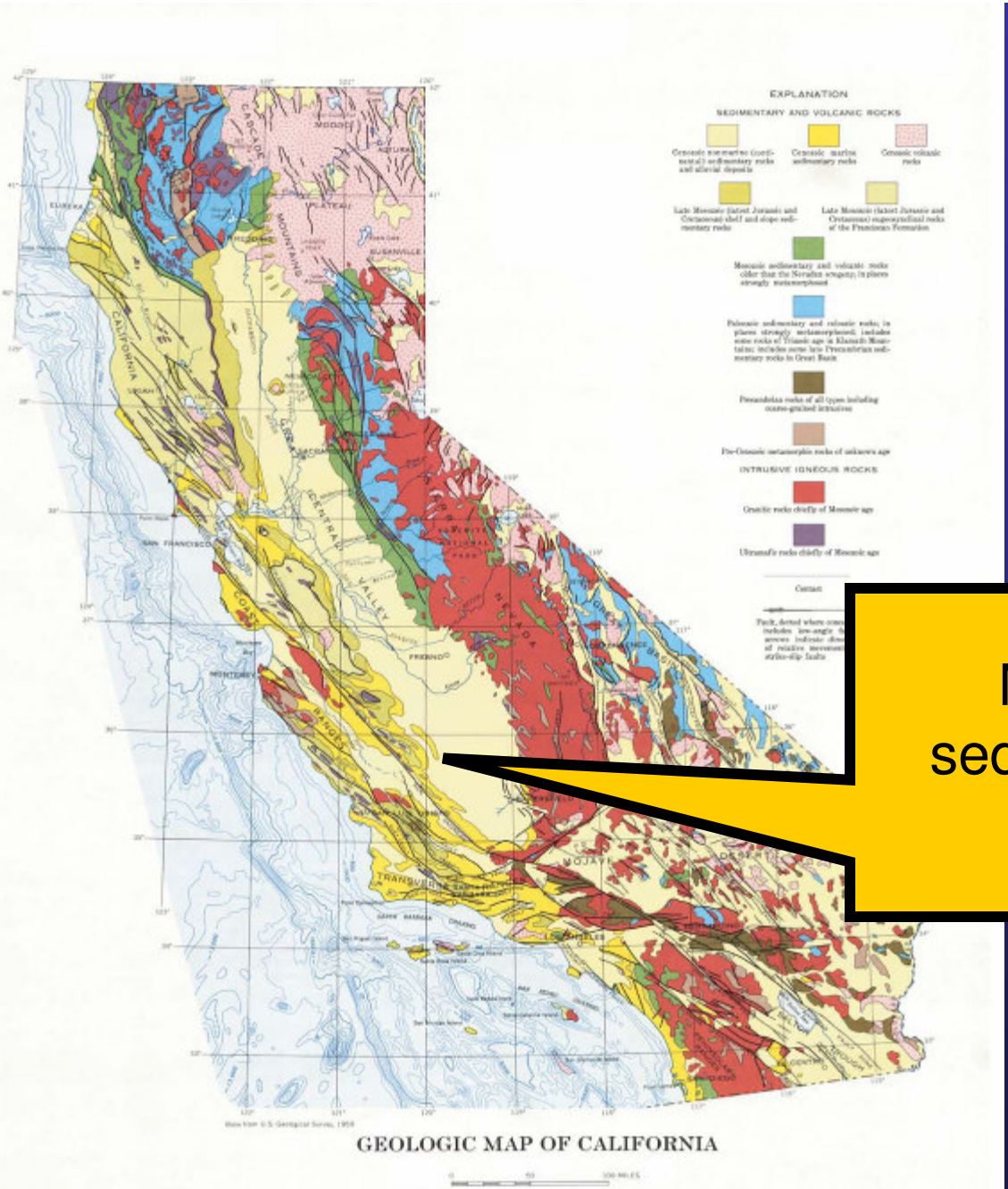
Central Valley Region



- 40% land surface
- >50% managed water supply
- 77% irrigated agriculture
- 3-Distinct Basins

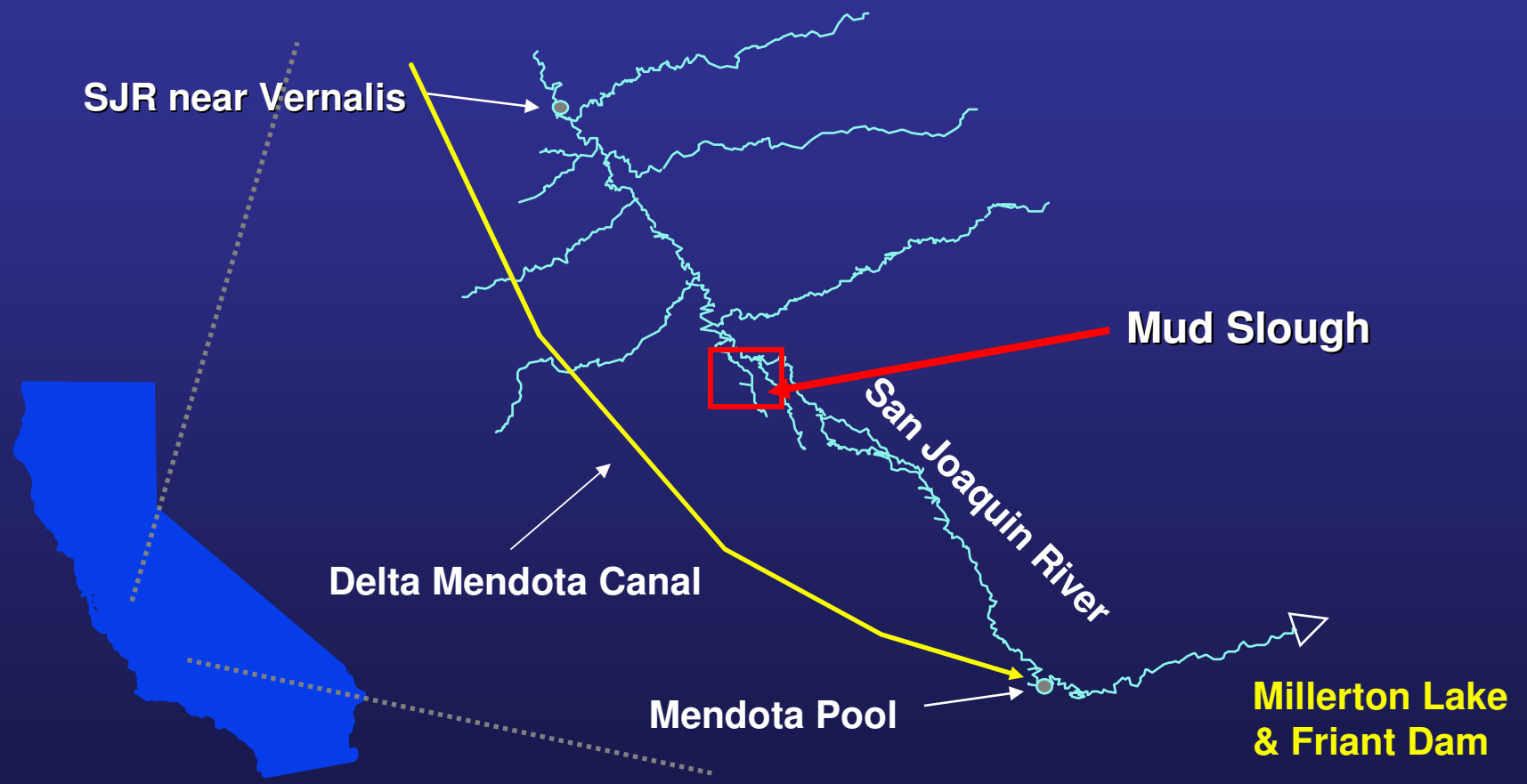
Selenium

- Toxic to wildlife at low concentrations
- Bioaccumulates
- Objectives:
  - 5 ug/L (ppb) in SJR (fast moving water)
  - 2 ug/L (ppb) in wetland supply channels (slow or standing water)
- Naturally occurring in shallow groundwater in some parts of the region



Marine sedimentary rocks

Lower San Joaquin River Basin



Regulating Drainage

- What is drainage?
  - Surface or subsurface (tile drains)
- Regulatory tools
  - WDRs
  - Waivers of WDRs
  - Prohibitions of discharge
- Why subsurface drainage management matters
  - Protect wildlife
  - Protect other downstream uses
  - Maintain viability of Westside agriculture (food production, jobs, economies of rural SJV communities)

Regulating Drainage

- Implementation
  - Prioritize
  - Regional approach
  - Encourage drainage re-use
  - Recommends an out-of-valley drain
  - Focus on load reductions

Regulating Drainage

- Program features
  - Water quality objectives
  - Prohibition of discharge
- Project performance
- Project oversight and accountability

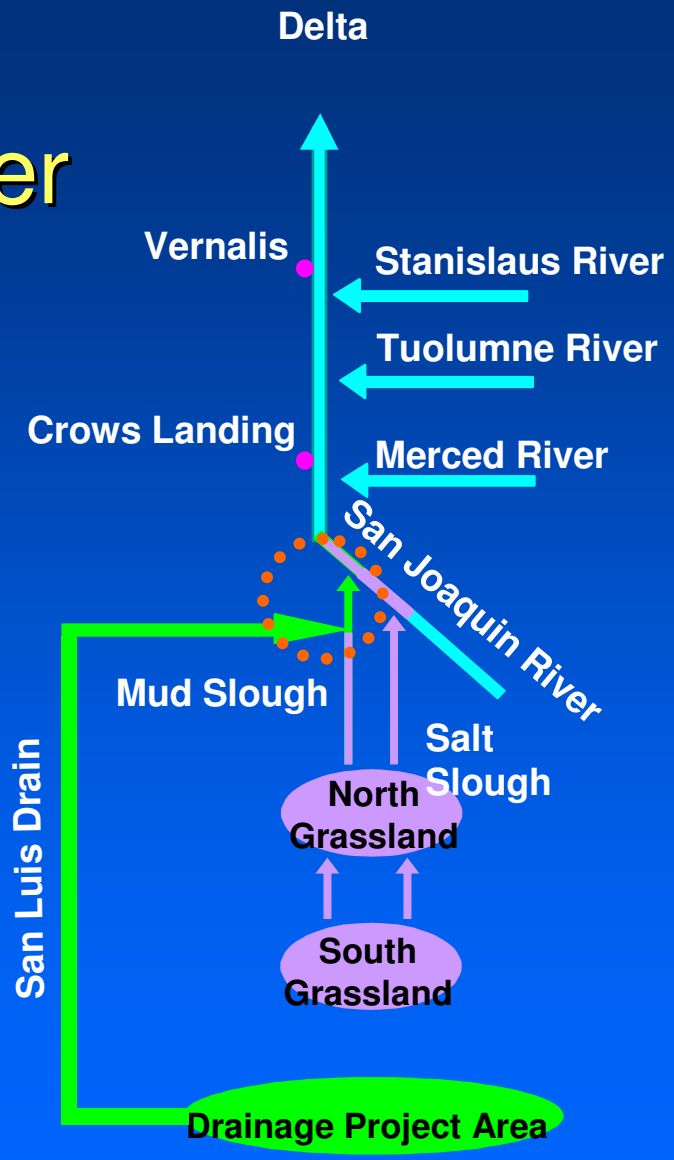
Lower San Joaquin River

Grassland Bypass Concept

Impaired
6-miles natural channels

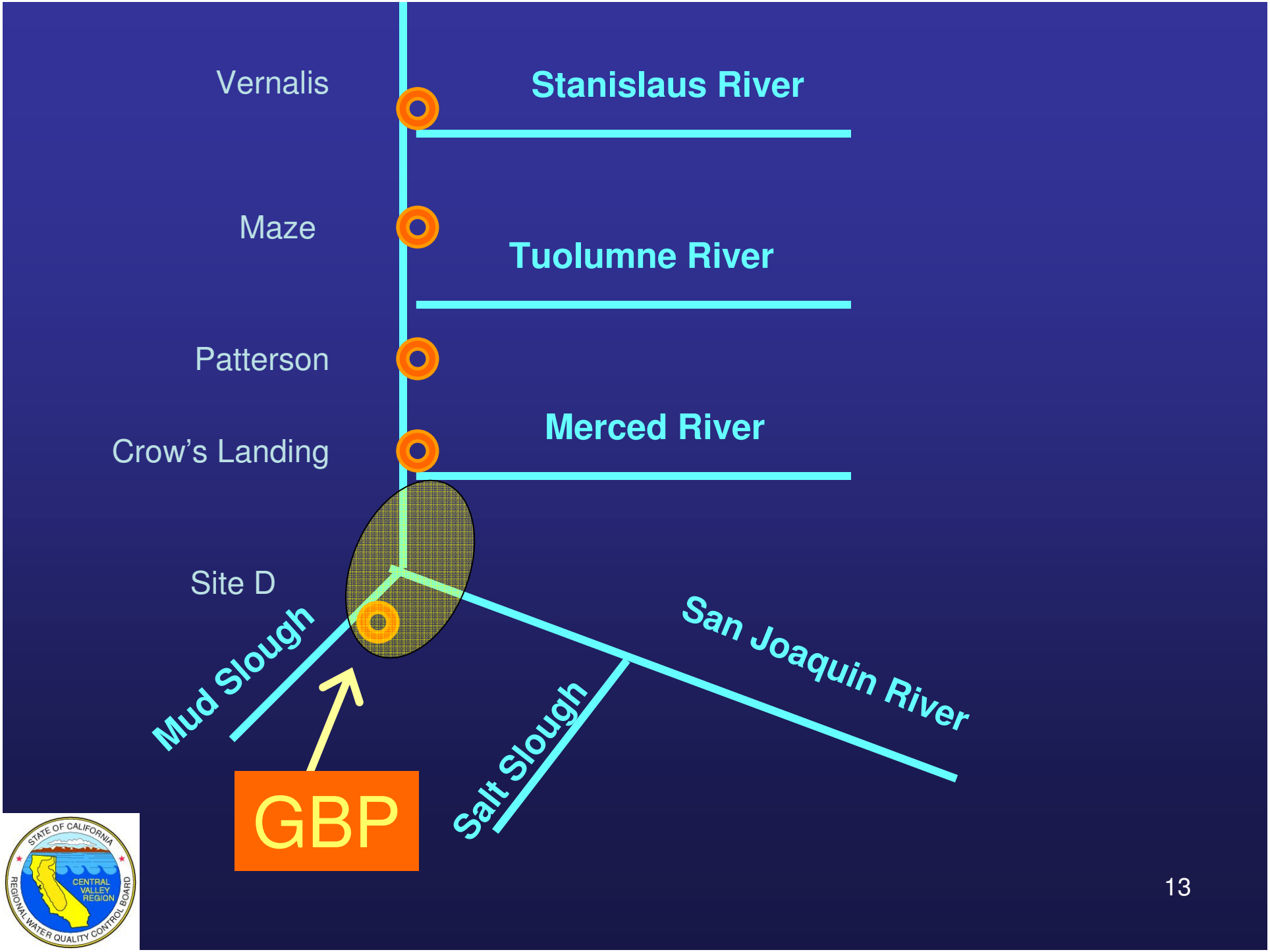
Improved
31 miles natural channels
75 miles wetland channels
61,810 acres wetlands

Unimpaired



Compliance Schedule for Meeting Selenium Objectives (**bold**) & Performance Goals (***italics***)

Waterbody/ Water Year Type	**10 Jan 1997**	**1 Oct 2002**	**1 Oct 2005**	**1 Oct 2010**
Wetland Channels Salt Slough	**2 ug/L monthly ave**			
SJR below Merced Rv - Wet		*5 ug/L monthly ave*	**5 ug/L 4-day ave**	
SJR below Merced Rv - Dry		*8 ug/L monthly ave*	*5 ug/L monthly ave*	**5 ug/L 4-day ave**
SJR above Merced Rv & Mud Slough				**5 ug/L 4-day ave**


Vernalis
Stanislaus River
Maze
Tuolumne River
Patterson
Merced River
Crow's Landing
Site D
Mud Slough
San Joaquin River
Salt Slough
GBP

Alternatives

- No Project = no basin plan amendment
- GAF Proposal: extend the time schedule for 9 years, 3 months, ramping down selenium load allocation each year.
- Alternative Action: extend the time schedule for 9 years, 3 months. Load allocation continues at 2010 level through 2019.

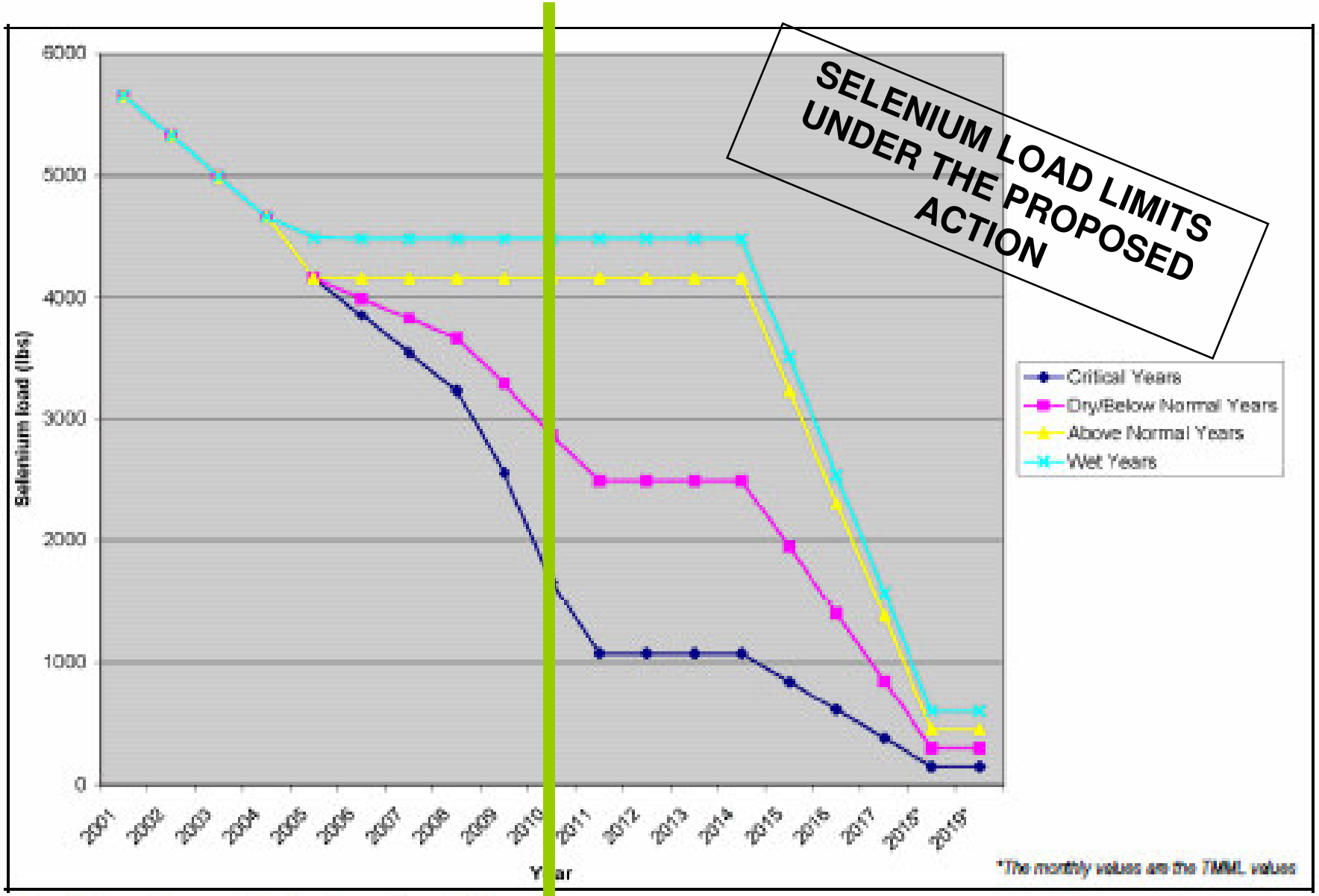


Figure 2-2 Proposed Selenium Annual Load Values

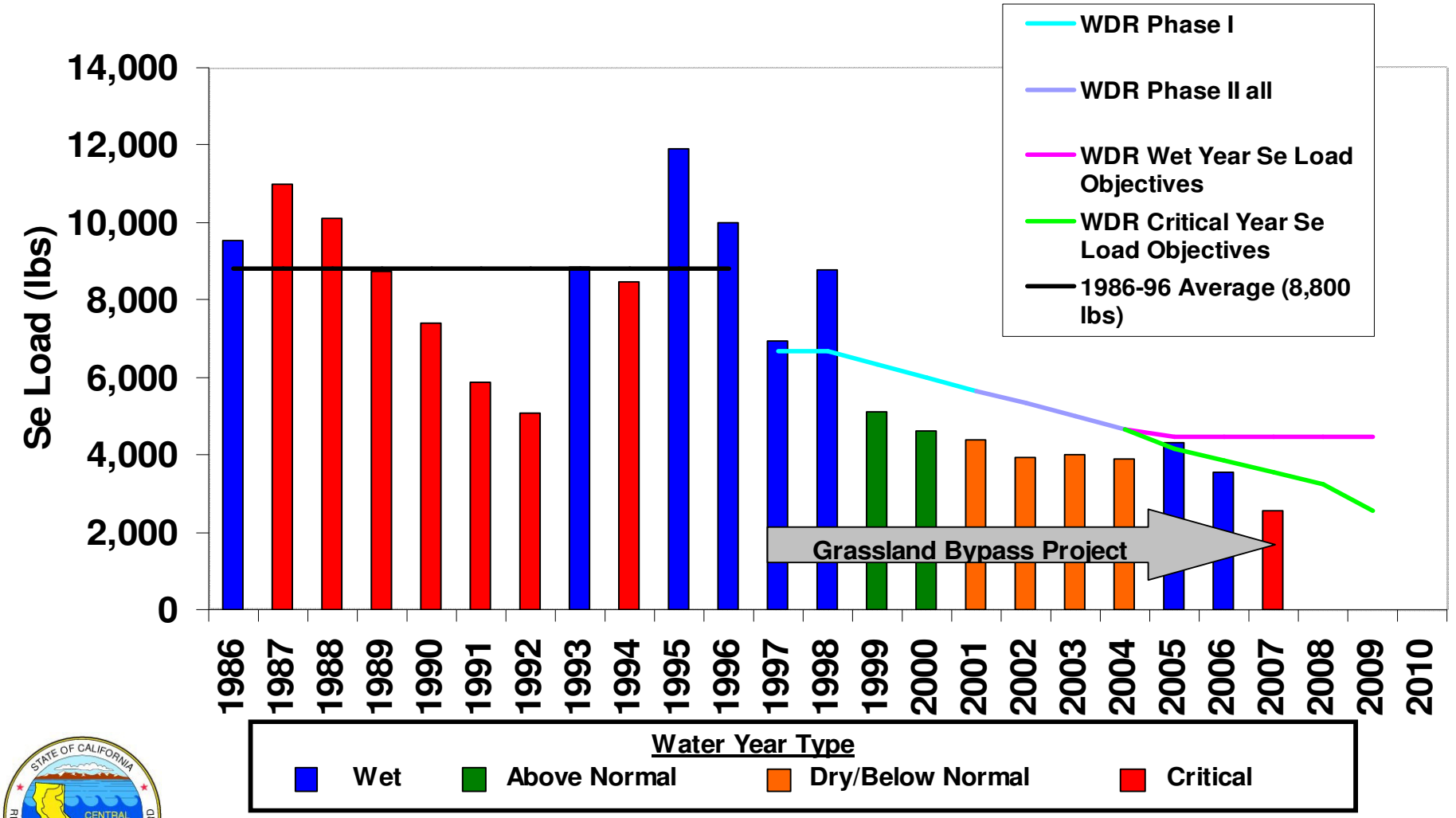
Basin Planning Steps

- Scoping ***DONE***
- Study ***PENDING ADOPTION***
- Draft Report
- Response
- Final Report
- Public hearing
- Adoption
- SWRCB, OAL & USEPA approval

Drainage Management Strategies

- Source control
  - Engineered
  - Incentives
    - Loans
    - Pricing
    - Trades
- Reuse
- Treatment*

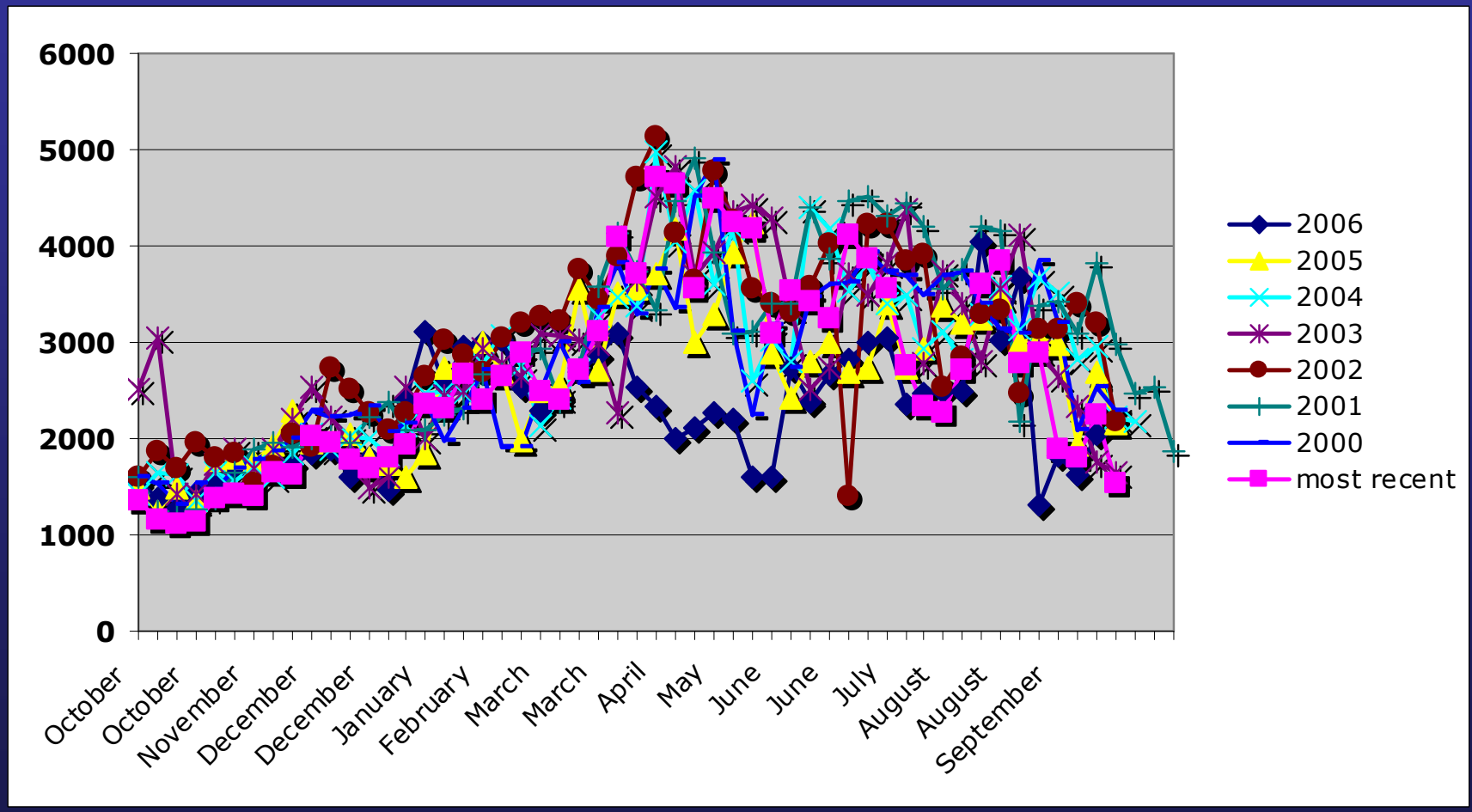
GBP Annual Selenium Discharge



Discharge @ San Luis Drain

(SFEI Station B)

SALT: SURFACE WATER



EC (uS/cm) in Mud Slough (north)

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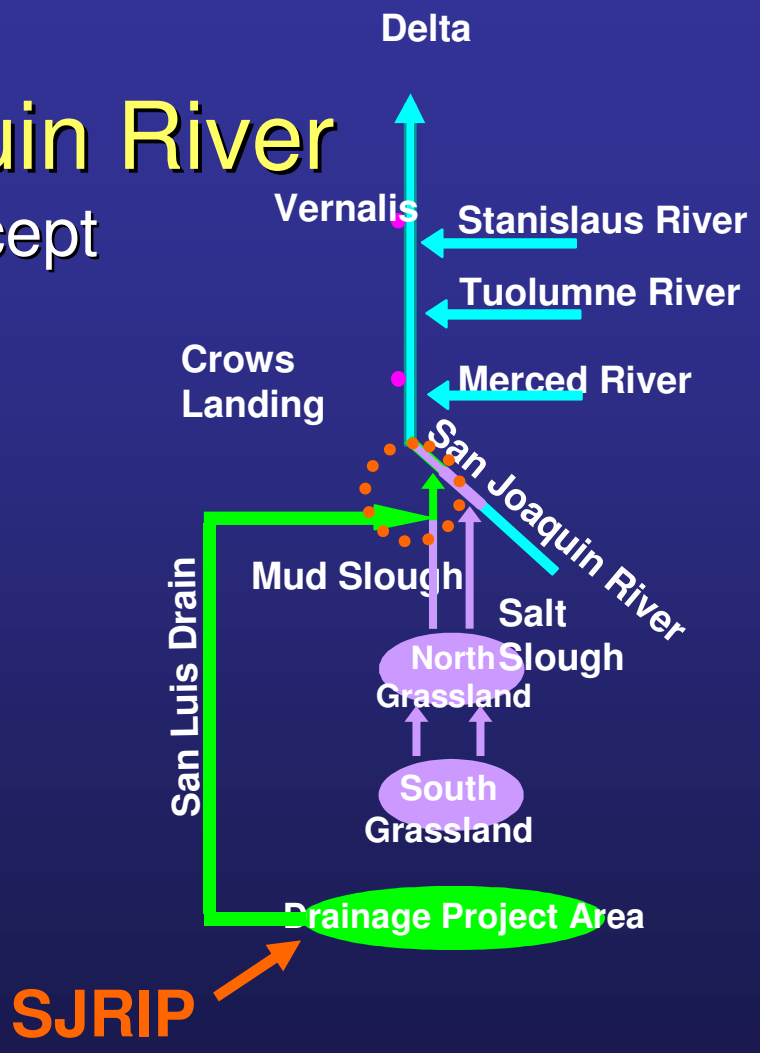

Drainage reuse

- Collect and blend (extend irrigation supply)
- Collect and irrigate salt tolerant crops and halophytes (SJRIP)
  - Up to 6900 acres
  - Not your typical farming operation
  - Partial knowledge on impacts to groundwater

SALT: SURFACE WATER

Wet Year Types	2008 Use Agreement									
	1	2	3	4	5	6	7	8	9	10
	2010	2011	2012	2013	2014	2015	2016	2017	2018*	2019*
Jan	12396	12396	12396	12396	12396	10679	8286	5893	12396	12396
Feb	19618	19618	19618	19618	19618	16901	13114	9327	19618	19618
Mar	23241	23241	23241	23241	23241	20022	15536	11049	23241	23241
Apr	17104	17104	17104	17104	17104	14735	11433	8132	17104	17104
May	16762	16762	16762	16762	16762	14441	11205	7969	16762	16762
June	17339	17339	17339	17339	17339	14937	11590	8243	17339	17339
July	17521	17521	17521	17521	17521	15095	11712	8330	17521	17521
Aug	15549	15549	15549	15549	15549	13395	10394	7392	15549	15549
Sep	8214	8214	8214	8214	8214	7076	5491	3905	8214	8214
Oct	6308	6308	6308	6308	6308	5434	4217	2999	6308	6308
Nov	6555	6555	6555	6555	6555	5647	4382	3117	6555	6555
Dec	7240	7240	7240	7240	7240	6238	4840	3442	7240	7240
Annual	**167,846**	**167,846**	**167,846**	**167,846**	**167,846**	**144,600**	**112,200**	**79,800**	**47,400**	**47,400**
* The Monthly Values are equal to 2014 values								Values in Tons of Salt		

SALT:GROUNDWATER

- Most monitoring is voluntary, irregular
- Large, variable groundwater basin

Very salty & seleniferous

Useable, selenium not a problem

Very salty

- Drier year=more pumping
- SJRIP: Drainage used as irrigation

Westside Regional Drainage Plan

The Westside Regional Drainage Plan (Plan) is intended to: 1) identify scientifically sound projects proven to be effective by the government, local agencies and private consultants; 2) develop an aggressive implementation plan initially utilizing existing projects documented to be environmentally sound; and 3) curtail discharges to the San Joaquin River in accordance with impending regulatory constraints while maintaining the ability to farm.

Key management strategies

- Land retirement
- Groundwater management
- Source control
- Regional Reuse
- Drainage treatment
- Salt disposal